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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,197	12/03/2003	Steven C. Quarre	044182 307083	7284

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Pillsbury Winthrop LLP
Intellectual Property Group
Suite 200
11682 El Camino Real.
San Diego, CA 92130-2092

EXAMINER

EARLY, MICHAEL JACOBY

ART UNIT	PAPER NUMBER
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3744

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/728,197

Applicant(s)

QUARRE, STEVEN C.

Examiner

Michael J. Early

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 and 39-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-20, 32-37 and 39-41 is/are allowed.
- 6) ☒ Claim(s) 21-30 is/are rejected.
- 7) ☒ Claim(s) 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 21-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itakura et al. (US 2003/0019216 A1).

Regarding claim 21, Itakura et al. disclose of an apparatus that is capable a method of cooling a charge-coupled device (80 – laser diode) wherein the method comprises providing a cavity (void space within metallic package [5]) in a housing (5 – metallic package), said cavity adapted to house said charge-coupled device (as seen in Figure 6A); coupling said charge-coupled device to a cold side (surface located between thermoelectric chip [25] and second board [24]) of a thermoelectric cooling device (25 – thermoelectric chip) (as seen in Figure 6B); coupling a hot side (surface between located thermoelectric chip [25] and first board [22]) of said thermoelectric cooling device to a transfer plate (22 – first board) (as seen in Figure 6B); and sealing said cavity (as seen in Figure 6A); said sealing operable to provide a substantially environmentally-tight moisture barrier for said charged-coupled device (it is essential for

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this type of apparatus to operate in dry conditions because of the performance and reliability problems associated with operating in moist environments).

Itakura et al. do not expressly teach a charge-coupled device.

Itakura et al. do however teach of a thermoelectric module that is used to cool a laser diode. At the time of the invention, one of ordinary skill in the art would have known that the means for cooling a laser diode are applicable for cooling a charge-coupled device (CCD).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the existing apparatus of Itakura et al. by using a laser diode in place of the charge-coupled device, because the prior art of Itakura et al. meet the structural limitations associated with the present application and furthermore, the use of a thermoelectric module to cool an electrical component (i.e. charge-coupled device, laser diode, etc.) is well known in the art.

Regarding claim 22, Itakura et al. disclose interposing a spacer (6 – heat transfer block) between said charge-coupled device and said cold side of said thermoelectric cooling device (as seen in Figure 6A).

Regarding claim 23, Itakura et al. disclose said interposing spacer between said charge-coupled device and said cold side of said thermoelectric cooling device comprises selectively dimensioning said spacer to maximize a surface area of contact between said charge-coupled device and said cold side of said thermoelectric cooling device (As previously disclosed, the heat transfer block [6] is able to maximize the surface area between the laser diode [80] and cold side of the thermoelectric chip [25]; Figure 6A).

Regarding claim 24, Itakura et al. disclose said interposing spacer between said charge-coupled device and said cold side of said thermoelectric cooling device comprises

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selectively dimensioning said spacer to position said hot side of said thermoelectric cooling device in a predetermined location relative to said charge-coupled device (as seen in Figures 6A, 6B).

Regarding claim 25, Itakura et al. disclose cooling said hot side of said thermoelectric cooling device (this is performed as heat is transferred from the hot to the cold side of the thermoelectric module; paragraph 0019).

Regarding claim 26, Itakura et al. disclose said cooling comprises transferring heat generated by said thermoelectric cooling device from said charge-coupled device (see paragraph 0019 and furthermore, the general purpose of a thermoelectric cooling device is to remove heat generated by an electronic device).

Regarding claim 27, Itakura et al. disclose said sealing comprises applying a conformal coating (71 – first solder layer).

Regarding claim 28, Itakura et al. disclose said sealing is operable to prevent moisture from penetrating said cavity (it is essential for this type of apparatus to operate in dry conditions because of the performance and reliability problems associated with operating in moist environments).

Regarding claim 29, Itakura et al. disclose interposing a thermal barrier (22 – first board) between said housing and said transfer plate (as seen in Figure 6B).

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Itakura et al. in view of Swiatosz (US 4,253,515).

Itakura et al. do not expressly disclose details related to an epoxy laminate.

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Swiatosz teaches a mounting process using epoxy laminate material to be old in the art (see col. 4, lines 15-19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the existing system of Itakura et al. by incorporating epoxy laminate for mounting and isolation purposes (see Specification, page 4, lines 17-22), as taught by Swiatosz, to provide optimum isolation and insulation, and minimum separation between surfaces connected, thus making the system more reliable.

Allowable Subject Matter

Claims 1-20 and 32-41 are allowed.

Claim 31 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments, see Remarks, filed 1/5/07, with respect to claims 1 and 11 have been fully considered and are persuasive. The rejection of claims 1 and 11 has been withdrawn.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Early whose telephone number is (571) 272-3681. The examiner can normally be reached on Monday - Friday, 7am - 4:30pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MJE
3/14/07

Michael J. Early
Patent Examiner
Art Unit 3744




CHERYL TYLER
SUPERVISORY PATENT EXAMINER